

[0085] As described above, in the display device according to an embodiment, since the cover layer CP including the organic material covers the openings OP and the wavy line CL, even if an impact is applied to the border ED of the substrate **100** such that stress is applied to the openings OP and the wavy line CL, since the cover layer CP is deformed by the stress such that the stress is dispersed within the cover layer CP, the wavy line CL, the first insulating layer CIL covering the wavy line CL, and the cover layer CP are prevented from being destroyed by the stress.

[0086] Also, in the display device according to an embodiment, although the first insulating layer CIL includes an inorganic material, such that the first insulating layer CIL is brittle, since the wavy line CL covering the openings OP of the first insulating layer CIL includes a metal material, and simultaneously the cover layer CP covering the wavy line CL includes the organic material, the first insulating layer CIL, the wavy line CL, and the cover layer CP are prevented from being destroyed by the stress. In embodiments, the display device with improved durability is provided.

[0087] The encapsulation part **300** is positioned on the substrate **100**. The encapsulation part **300** is positioned on the substrate **100** throughout the display area DA and the outer area OA of the substrate **100** and encapsulates the display unit **200** along with the substrate **100**. The encapsulation part **300** may be formed of a thin film encapsulation. The encapsulation part **300** may include an organic layer and an inorganic layer positioned on the organic layer. As one example, the encapsulation part **500** may include one or more organic layers and one or more inorganic layers, which are alternately laminated, and more specifically, there may be a plurality of the inorganic layers or the organic layers, and the plurality of inorganic layers and the plurality of organic layers may be alternately laminated.

[0088] The encapsulation part **300** may include at least one sandwich structure in which at least one organic layer is inserted between at least two inorganic layers. The inorganic layer positioned on the top layer of the encapsulation part **300** may be laminated with a larger area than the organic layer so as to cover an end of the organic layer, which is another layer. The organic layer of the encapsulation part **300** is made of polymer, and preferably, may be a single layer or a laminated layer formed of any one of polyethylene terephthalate, polyimide, polycarbonate, epoxy, polyethylene, and polyacrylate. For example, the organic layer may be formed of polyacrylate, and more specifically, includes a material in which a monomer composition including diacrylate-based monomers and triacrylate-based monomers is polymerized. Herein, the monomer composition may further include monoacrylate-based monomers, and further include a known photo-initiator such as TOP, but is not limited thereto. The inorganic layer of the encapsulation part **500** may be a single layer or a laminated layer including metal oxide or metal nitride. More specifically, the inorganic layer may include one or more of SiNx, Al<sub>2</sub>O<sub>3</sub>, SiO<sub>2</sub>, and TiO<sub>2</sub>.

[0089] A protection film may be positioned at each of an upper portion of the encapsulation part **300** and a lower portion of the flexible substrate **100**, and at least one optical film of a phase difference film and a polarization film may be positioned on or under the protection film.

[0090] As described above, in the display device according to an embodiment, since the first insulating layer CIL includes the plurality of openings OP disposed to be separated or spaced from each other in a direction corresponding

to the outer area OA of the substrate **100**, the part of the first insulating layer CIL positioned corresponding to the outer area OA has the island shape on the substrate **100**. Since the first insulating layer CIL positioned at the outer area OA neighboring the border ED of the substrate **100** on the substrate **100**, even if an external impact is applied to the border ED of the substrate **100** such that stress is applied to the first insulating layer CIL, since the stress is blocked by the opening OP, the stress is inhibited from being transmitted to the display unit **200** through the first insulating layer CIL.

[0091] In embodiments, although the first insulating layer CIL has a unique brittleness for the inorganic material, since the first insulating layer CIL includes the plurality of openings OP disposed to be separated from each other in the direction corresponding to the outer area OA of the substrate **100**, even if stress is applied to the border ED of the substrate **100**, the stress is blocked by the opening OP, and thus the stress is minimized from being transmitted to the display unit **200**.

[0092] Also, in the display device according to an embodiment, since the wavy line CL has the vertically winding shape corresponding to the outer area OA, even if the impact is applied to the border ED of the substrate **100** such that stress is applied to the wavy line CL, since the stress is dispersed along the long path of the itself wavy line CL within the outer area OA, the wavy line CL and the first insulating layer CIL covering the wavy line CL are prevented from being destroyed by the stress.

[0093] Also, in the display device according to an embodiment, since the cover layer CP including the organic material covers the openings OP and the wavy line CL, even if the impact is applied to the border ED of the substrate **100** such that the stress is applied to the openings OP and the wavy line CL, since the cover layer CP is deformed by the stress such that the stress is dispersed within the cover layer CP, the wavy line CL, the first insulating layer CIL covering the wavy line CL, and the cover layer CP are prevented from being destroyed by the stress.

[0094] Also, in the display device according to an embodiment, although the first insulating layer CIL includes an inorganic material such that the first insulating layer CIL is brittle, since the wavy line CL covering the openings OP of the first insulating layer CIL includes a metal material, and simultaneously the cover layer CP covering the wavy line CL includes an organic material, the first insulating layer CIL, the wavy line CL, and the cover layer CP are prevented from being destroyed by the stress.

[0095] In embodiments, by including the first insulating layer CIL with the opening OP, the wavy line CL, and the cover layer CP, the display device with improved durability is provided.

[0096] Next, the display device according to another embodiment will be described with reference to FIG. 2. Hereinafter, parts of the display device according to an embodiment, different from those described above, will be described.

[0097] FIG. 2 is a cross-sectional view of a part of a display device according to another embodiment.

[0098] As shown in FIG. 2, the display device according to another embodiment includes the substrate **100**, the display unit **200**, the first insulating layer CIL, the wavy line CL, the second insulating layer OIL, and the encapsulation part **300**.